

Lead & Copper Frequently Asked Questions:  
Safe Drinking Water Act 1996 Amendments and the NSF Standard

1. Is there any law or regulation for lead in drinking water?

Yes. The National Primary Drinking Water Regulations (NPDWR) for Lead and Copper, 40 CFR Parts 401 and 142, promulgated in 1991, established an action level of 15 parts per billion (ppb) for lead in drinking water. Compliance with the action level is determined by measuring the concentration of lead in a number of samples collected at the consumer's tap. The lead action level is exceeded if the concentration of lead in more than 10 percent of tap water samples is greater than 15ppb.

2. What are the sources of lead in drinking water?

Lead in drinking water results primarily from corrosion of materials containing lead installed in building plumbing such as lead solder, brass, bronze and other alloys containing lead in contact with the water. The amount of lead attributable to corrosion by-products in the water depends on a number of factors, including the amount and age of lead bearing materials susceptible to corrosion, the way they were manufactured, how long the water is in contact with the lead-containing surfaces, and how corrosive the water is towards these materials.

The corrosivity of water is influenced by a number of factors, including acidity, alkalinity, dissolved solids and hardness. In general, soft acidic waters are more corrosive to lead than hard waters.

3. Is there any law or regulation limiting lead content in pipe, plumbing fittings, fixtures, faucets, solder and flux?

Yes. Section 1417(a)(1) of the Safe Drinking Water Act (SDWA) requires that after June 19, 1986 only "lead free" pipe, solder or flux may be used in the installation or repair of (1) Public Water Systems, or (2) any plumbing in residential or non-residential facility providing water for human consumption, which is connected to a Public Water System. Under section 1417(d), "lead free" as defined in the SDWA means that solders and flux may not contain more than 0.2 percent lead, and pipes, pipe fittings, and well pumps may not contain more than 8.0 percent lead.

4. How can I tell if a faucet or plumbing device contains more than 8% lead?

In general, plumbing products that are on the market contain 8% or less lead. The amount of lead contained in the plumbing product is usually governed by its manufacturing process. In order to find out how much lead is contained in a plumbing product, you should contact the manufacturer or the importer/distributor and ask for a certificate of lead content. Another approach is to send the plumbing product to a laboratory and have it analyzed for lead content.

However this approach may not be practical since the cost of the test could be several times of the purchase price the product.

5. Can "lead-free" plumbing fixtures or devices leach lead?

Yes, as noted in response to Question 2, any plumbing device or fixture that contains lead and is in contact with the water is a potential source of contamination. Brass fittings and plumbing fixtures, containing 8% or less lead, have been found to contribute high lead levels for a considerable period of time after their installation, even in cases where these devices are in contact with relatively non-corrosive waters. The amount of lead that may leach into the water from a brass faucet or fixture is not solely related to the amount of lead contained in the alloy. The amount of lead leaching from a brass alloy is greatly influenced by the manufacturing process.

6. Is there a performance standard limiting the leaching of lead into drinking water from faucets, fittings, fixtures, pipes and plumbing devices?

A voluntary standard, NSF International's consensus Standard 61, (ANSI/NSF Standard 61: Drinking Water System Components-Health Effects), including inline and endpoint devices has been established. The criteria for lead in the NSF Standard limits the amount of lead that can leach into the water from a particular product. The standard does not specify the lead content in that product. Devices that are made of brass alloys that contain lead may be certified if they pass the performance test prescribed by the standard. Some manufacturers modified their manufacturing processes to meet the NSF Standard. NSF Standard 61, section 9 covers endpoint devices. The NSF Standard defines endpoint devices as mechanical plumbing devices, components, and materials which are typically installed within the last liter of the distribution system and are intended by the manufacturer to dispense water for human ingestion. The devices include kitchen and bar faucets, lavatory faucets, water dispensers, drinking fountains, water coolers, glass fillers, residential refrigerator ice makers, supply stops and endpoint control valves.

NSF Standard 61, section 8 covers mechanical devices which include inline devices in building distribution systems including any device that is used to measure or control the flow of water that is used in treatment/ transmission distribution systems, and is in contact with the water intended for human ingestion. Inline devices in a building used to measure or control the flow of water include water meters, building valves, check valves, meter stops, valves and fittings backflow preventers, etc. The NSF Standard defines inline devices as any device installed on a service line or building distribution system downstream of the water main and before endpoint devices.

NSF Standard 61, Section 4 covers pipes, fittings and small drinking water storage devices having domestic or residential applications including the products or water contact materials of: pipes, fittings, tubing, hoses, well casing, drop pipes and screens etc.

7. How does NSF Standard 61, Section 9 relate to the definition of lead free?

NSF Standard 61, Section 9 relates to the amount of lead leached from a product while the

definition of "lead free" for pipe and pipe fitting corresponds to a maximum of 8% lead content. By amending Section 1417 of the SDWA, Congress incorporated a performance standard into the law for endpoint devices intended to "dispense water for human consumption." Section 1417(e) of the SDWA, states that "lead free" with regard to plumbing fittings and fixtures intended to dispense water for human consumption means those fittings and fixtures that are in compliance with a voluntary standard established pursuant to the Act. The reason for this requirement by Congress, EPA believes, was that some brass fittings and plumbing fixtures containing 8% or less lead have been found to contribute high lead levels for a considerable amount of time after their installation, even in contact with relatively non-corrosive waters. Because of low flow and infrequent usage, lead concentration levels in water in contact with endpoint devices dispensing water for human consumption were found to exceed the 15 ppb action level for lead, established by EPA in the Lead and Copper Rule.

8. Can an endpoint plumbing device meeting the 8 percent limitation specified by the SDWA, but not meeting an approved voluntary standard, such as the NSF Standard 61, Section 9, be used in the installation or repair of Public Water Supply Systems?

No. In order to be legally used in the installation or repair of Public Water Supply Systems, a product must be certified by an approved voluntary standard and meet the 8% "lead free criteria."

9. How much lead does the NSF Standard allow to be leached from endpoint devices?

The NSF Standard limits the amount of lead from endpoint devices to 11ppb when normalized to 1 Liter. This approach is based on the 15ppb action level established in the Lead and Copper rule, considering the 11ppb lead contributed from the endpoint device as well as from sources other than the endpoint device, which is assumed to be 4ppb.

10. What is the NSF test procedure for endpoint devices?

The NSF test procedure requires that at least three endpoint devices be exposed to specially formulated water for a period of 19 days. On days 3, 4, 5, 10, 11, 12, 17, 18 and 19, water samples from the endpoint devices are collected. The observed lead dosage levels, (lead concentration times the volume of the endpoint device) normalized to 1 Liter are determined and statistically compared to the 11ppb limit.

11. Are inline devices regulated under the SDWA? Does the SDWA require inline devices to meet health effects based performance standards?

The SDWA prohibits the use of any pipe, any plumbing fitting or fixture that is not lead-free (containing more than 8% lead) in the installation or repair of any public water system or any plumbing in residential or non-residential facility providing water for human consumption, which is connected to a public water supply system.

However, there is no specific language in the SDWA which would require that inline

devices meet health effects-based performance standards limiting the leaching of lead into the drinking water. Therefore, EPA has not recognized these standards as requirements for purposes of Section 1417 of the SDWA. Thus, while EPA encourages the industry to conform with these standards, the industry is not currently required to do so. However the absence of explicit statutory requirements that such devices comply with NSF Standard 61 does not preclude State or local governments from adopting such requirements.

In most instances, inline devices installed in building plumbing systems handle a large volume of water used for showering, laundry etc. compared to endpoint devices dispensing water for human consumption. Although some inline devices containing 8% or less lead may leach certain quantities of lead, the amount of lead leached out from these devices would generally be expected to be diluted to levels below those of concern by the relatively high volume of water passing through them.

12. How can I be sure that the faucet or plumbing device meets the NSF Standard?

Products certified against the NSF standard carry a certification mark of the certifying organization. NSF International and Underwriters Laboratories (UL) publish Listing books of products that they have tested and certified against the NSF Standard. Both organizations also maintain these Listings through their Internet sites. One can obtain Listing books from NSF International at 1-800-NSF-MARK, or visit their website at <http://www.nsf.org>. One can contact UL at 847-272-8800 or visit their website at <http://www.ul.com>.

13. Which parties helped develop the NSF Standard?

The standard was developed using voluntary consensus process. All interested parties were represented, including regulatory agencies, industry, water suppliers, consultants, and other users of products covered by the standard.

14. Is NSF the only organization that can test against the Standard?

Any organization can test products against the NSF standard. NSF and UL are two organizations that are accredited by the American National Standards Institute to certify products against NSF Standard 61. Currently 29 states have regulations requiring products to meet NSF Standard 61 and all of these states require products to be Certified by an ANSI accredited certifier.

15. What is the deadline for selling non lead-free products?

The law prohibits any person from introducing into commerce any pipe, or plumbing fitting or fixture that is not lead free after August 6, 1998, except for a pipe that is used in manufacturing or industrial processing.

The term "introduce into commerce" means the time when the product is offered for sale in the wholesale and retail market. The law does not make any distinction between the wholesale

and retail sales of these materials. Thus, the sale or distribution from inventory of any pipe, or any pipe or plumbing fitting or fixture, that is not lead free, is prohibited after the deadline established by the SDWA.

16. Does the exception for industrial and manufacturing processes apply to all such uses?

The exception applies to any process where the water conveyed by the plumbing or distribution system is not used directly or indirectly for human consumption.